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olf club.

The swing measurement method according to the three dimensional position coordinate and pointing direction data, represent the state of the grip portion at least from a top view state of the swing.

The swing measurement method according to the three dimensional magnetic sensor fixed on the grip portion has three mutually orthogonal axes. One axis direction of an axis from among the three orthogonal axes being aligned with a direction of a shaft of the golf club; and another axis direction of an axis from among the other two axes being aligned with an impact direction of the golf club.

The swing measurement method according to the three dimensional magnetic sensor is fixed on the grip portion.

the three dimensional magnetic sensor fixed to the grip portion has three mutually orthogonal axes for sensing;

one direction of an axis from among the three mutually orthogonal axes being aligned with a direction of an axis of a shaft of the golf club; and

one direction of an axis from among the other two axes being aligned with an impact direction of the golf club.

5. The swing measurement method according to claim 2,
wherein the three dimensional magnetic sensor is fixed to
the end of the grip portion.

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wrist angle time sequence data of a wrist angle found based on a shaft direction angle obtained from the pointing direction of the grip portion and showing a shaft direction of the golf club on the swing plane, and

rotation angle time sequence data of a shaft rotation angle, around a shaft axis of the golf club, from the pointing direction.

7. The golf swing analysis method according to claim 6, wherein the wrist angle is found by subtracting the arm angle from the shaft direction angle.

8. The golf swing analysis method according to claim 6, wherein the swing plane of the grip portion is calculated using the swing path of the grip portion including the swing behavior at least from a top state of the golf swing to an impact state.

9. The golf swing analysis method according to claim 6, wherein the swing path arc of the grip portion is calculated using the projected swing path including the swing behavior at least from a top state of the golf swing to an impact state.

10. The golf swing analysis method according to claim 6, wherein the arm angle time sequence data, and at least one of the wrist angle time sequence data and the rotation angle time sequence data, represent the swing

at least from a top state of the golf
ate.

The golf swing analysis method acco
wherein the swing behavior of the gri
by plotting at least one time sequenc
wrist angle time sequence data and t
e sequence data, against the arm angl
data.

The golf swing analysis method acco
wherein:

data acquisition means, which has
three dimensional magnetic sensor and
means for forming magnetic fields, eac
ion of intensity and direction thereo
that the three dimensional magnetic
magnetism of each of the formed magneti
g signals corresponding to three dime
of the three dimensional magnetic sen
to a predetermined point, and to point
of the three dimensional magnetic se
to a predetermined direction,
quires the time sequence data of the th

11. The ~~golf~~ swing analysis method according to

12. The golf swing analysis method according to

the data acquisition means, which has
a three dimensional magnetic sensor and
a means for forming magnetic fields, each

acquires the time sequence data of the three

13. The golf swing analysis method according to claim 6, wherein:

the time sequence data of the three dimensional position coordinates and the time sequence data of the pointing direction during the golf swing, are acquired by performing measurements from images obtained by the camera.

14. A computer program product, comprising a computer readable medium having computer program code embodied for an analysis of swing behavior of a golf club, the computer program code including:

computer program code configured to cause a computer to receive time sequence data of three dimensional position coordinates of a grip portion of the golf club and time sequence data of pointing direction of the grip

portion during a golf swing from a data acquisition means;

computer program code configured to cause a computer to compute a swing plane, on which a swing path of the grip portion is approximated, from the time sequence data of the three dimensional position coordinates;

computer program code configured to cause a computer to project the swing path of the grip portion on the swing plane and approximate the projected swing path as an arc to obtain the arc as a swing path arc of the grip portion; and

computer program code configured to cause a computer to obtain:

arm angle time sequence data of an arm angle showing a position of the grip portion on the swing plane from the time sequence data of the three dimensional position data and the swing path arc; and

at least one time sequence data from the group consisting of:

wrist angle time sequence data of an wrist angle found based on a shaft direction angle obtained from the time sequence data of the pointing direction and showing a shaft direction of the golf club on the swing plane, and

rotation angle time sequence data of a shaft rotation angle, around a shaft axis of the golf club, from

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the pointing direction.

15. The computer program product according to claim 14, wherein the wrist angle is found by subtracting the arm angle from the shaft direction angle.

16. The computer program product according to claim 14, wherein the swing plane is computed using the swing path of the grip portion including the swing behavior at least from a top state of the golf swing to an impact state.

17. The computer program product according to claim 14, wherein the swing path arc of the grip portion is computed using the projected swing path including the swing behavior at least from a top state of the golf swing to an impact state.

18. The computer program product according to claim 14, wherein the arm angle time sequence data, and at least one of the wrist angle time sequence data and the rotation angle time sequence data, represent the swing behavior at least from a top state of the golf swing to an impact state.

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19. The computer program product according to claim 14, wherein the computer program code also includes computer program code configured to cause a computer to plot at least one time sequence data, from among the wrist angle time sequence data and the rotation angle time sequence data, against the arm angle time sequence data.

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